

REMARKS

Claims 1, 2, 21-26, and 28-38 are pending in the Subject Application. Claims 3-20 and 27 were previously canceled. A new claim 39 is added. Basis for the new claim can be found in claim 2 and Table 3 of the Specification.

Applicants take this opportunity to thank the Examiner for his time and attention in the telephone interview of July 3, 2007. Applicants submit herewith the Declaration of John Paules for the Examiner's consideration with regard to several points raised during the interview. Applicants submit that the information provided demonstrates that the products disclosed in the cited references are made by processes so different from the process in which applicants' steel is made that the reference products can not have the properties exhibited by applicants' claimed alloy.

Rejections Under 35 U.S.C. §103(a)

Gondo, U.S. Patent No. 3,574,602

The Examiner rejected claims 1, 2, 23, 24 and 28-38 under 35 U.S.C. §103(a) as being unpatentable over Gondo, U.S. Patent No. 3,574,602. The Examiner relies on the overlap between the relative amounts of certain of the elements described in the Gondo patent and elements included within the claimed steel alloys. As explained in the telephone interview, the claimed alloy is a steel alloy and will necessarily have some of the same elements in other steel alloys. However, the claimed alloy differs with respect to the elements applicants have discovered to be critical for the desired steel alloy product. Further, the manufacture of an alloy does not occur simply by mixing together specific amounts of elements. The elements must be subjected to a process to achieve the resultant steel alloy. The manner in which the alloy is processed effects the character and properties of the resulting steel alloy.

The Gondo patent is silent as to the process for making the alloy described therein. "A conclusion of obviousness requires that the reference(s) relied upon be enabling in that it put the public in possession of the claimed invention." See MPEP §2144.08, II B. Where the prior art

fails to disclose a method for making a compound, "it may not be legally concluded that the compound itself is in the possession of the public." "In this context, ... the absence of a known or obvious process for making the claimed compounds overcomes a presumption that the compounds are obvious, based on close relationships between their structures and those of prior art compounds." MPEP §2144.08, II B quoting *In re Hoeksema*, 399 F.2d 269, 274, 158 U.S.P.Q 596, 601 (CCPA 1968).

In his Declaration submitted herewith, John Paules states

Gondo et al. do not specifically teach how to make the alloy steel. No direct tempering temperatures or other processing steps are taught. One skilled in the art is left to guess at how Gondo et al. made the described alloy. The only reference that one skilled in the art might look to for guidance as to how to make the Gondo et al. alloy steel is the reference in col. 2, lines 5-12, wherein Gondo indicates that they improved upon conventional high tension steels by adding to such steels Ti, Zr and B and at least one of Sn, Sb and As. Other than the optional addition of other elements, no other modification of the conventional steels is suggested and no modification to conventional processes is taught or suggested. In the absence of any specific teaching to the contrary, one must conclude that Gondo used conventional processing steps to produce the alloy steel. Conventional processing steps at the time the Gondo application was filed, (1967) would include tempering temperatures of 1000 °F and higher. Use of tempering temperatures in that range would preclude the alloy described in Gondo et al. from having ultimate tensile strength properties like those described in the subject application.

Claims 1, 2, 23, 24 and 28-38 and new claim 39 recited an alloy having ultimate tensile strength of 233-270 ksi and levels within that range. As discussed in the interview of July 3 and as stated in the enclosed Declaration, the ultimate tensile strength of 233-270 ksi recited in the claims, and in particular, the ultimate tensile strength of 245 ksi or greater for alloys used in certain military applications, is critical. Gondo does not, contrary to the Examiner's extrapolation, disclose an alloy having ultimate tensile strengths comparable to the ultimate tensile strengths of 233-270 ksi recited in the claims of the Subject Application. Gondo's disclosed range of ultimate tensile strength is 130-159 kg/mm<sup>2</sup> (184-226 ksi). Gondo's maximum ultimate tensile strength is 226 ksi. Although the difference between Gondo's maximum of 226 ksi and applicant's claimed

minimum of 233 ksi, is 6, the difference between Gondo's maximum and applicants' average or maximum ultimate tensile strength values is significant. Those differences are critical differences. As the enclosed Declaration states, the alloy described by Gondo would not be acceptable for use in the principle applications for which applicants' claimed steel alloy was designed.

Without any teaching of the manner of making the alloy, Gondo would not suggest to any one skilled in the art modifying known alloying processes as applicants did to achieve the claimed resulting alloy. Because there is no teaching in Gondo regarding the manner in which the steel alloy is made, and because the limited information Gondo provides regarding properties critical to applicants' steel alloy indicates that Gondo et al. did not achieve, and could not have achieved, a steel alloy having the same properties as those of applicants' claimed steel alloy, the Gondo patent does not render the claimed steel alloy obvious. Applicants submit that it may not be legally concluded that the claimed steel alloy was placed in the possession of the public based on the Gondo patent.

For the foregoing reasons, applicants submit that the Gondo patent does not disclose steel alloys that "necessarily possess the characteristics of the claimed steel alloy." According to the Action, at page 7, the Examiner's *prima facie* case is rebutted. Applicants respectfully request the withdrawal of the rejection of claims 1, 2, 23, 24 and 28-38 under 35 U.S.C. §103(a) in view of the Gondo patent.

Yoshie et al., U.S. Patent No. 5,454,883

The Examiner rejected claims 1, 2, 23-24 and 28-38 under 35 U.S.C. §103(a) as being unpatentable over Yoshie et al., U.S. Patent No. 5,454,883. The Examiner observed that Yoshie et al. teach tensile strengths up to 160 kg/mm<sup>2</sup> (227 ksi) and concluded that the Yoshie et al. tensile strengths "closely resemble the tensile strengths of ES-1 and ES-3 shown in Table 3 of the instant specification." The Examiner further concluded that Yoshie et al. "would inherently have a Charpy V-notch impact strength of about 20-43 at -40 °F, an ultimate tensile strength in the range of 233-270 ksi, and a strain-to-failure rate of about 15.1 to about 16.6% because Yoshie et al. ('883) teach (col. 1, lines 14-24) comparable tensile strength and substantially the

same composition as that of the claimed invention. Applicants respectfully disagree with the assumptions behind the Examiner's conclusion.

Yoshie et al. do not disclose comparable ultimate tensile strengths. As explained above with respect to the Gondo patent, 226 ksi or 227 ksi is not comparable to 233-270 ksi and certainly not comparable to 245 ksi, for steel alloys required for the military applications for which applicants' steel alloy was developed. Yoshie teaches processing the disclosed mix of elements at tempering temperatures of  $A_{C1}$  and above (*see for example*, Yoshie et al., col. 16, lines 42, 56, 64, col. 17, line 3, in Tables 3, 7 and 11 and the claims). A temperature of  $A_{C1}$ , as explained in the enclosed Declaration of John Paules, is higher than the normal tempering temperatures of about 1000 °F to 1200 °F. The tempering temperature for the claimed steel alloy is between about 400-500 °F.

The heat treatment used to make the steel alloy of the Subject Application produces unique mechanical properties which are significantly different from the properties that would be obtained as a result of the manufacturing temperatures taught in the Yoshie patent. The Subject Application teaches that the claimed alloy is tempered at a low temperature of about 260°C (500°F) to produce a very high ultimate tensile strength ranging from about 233 to 270 ksi and typically, about 247 ksi, as shown in Table 3 of the Subject Application. The alloy of the Subject Application, produced as described therein, has a Charpy V-notch impact strength ranging from about 20 to 43 ft-lb. at -40°F, also shown in Table 3 of the Subject Application. The low tempering temperature used to make the claimed alloy also imparts a high degree of strain hardening (a low yield strength/tensile strength ratio), which allows products made with the claimed alloy to absorb high strain without fracturing.

The steels described in the Yoshie et al. and Gondo et al. patents are tempered at significantly higher temperatures to produce alloys having lower strength levels. Even if the elements recited in the Yoshie and/or Gondo patents were to be used in the amounts described in the ranges described, the final product produced would have different properties from those of the claimed alloy because of the difference in the tempering temperature used. As John Paules concluded in his Declaration enclosed herewith, "the material of Yoshie et al. would not have the impact strength, ultimate tensile strength and strain-to-failure rate of Eglin Steel."

For the foregoing reasons, applicants submit that the Yoshie patent does not disclose steel alloys that “necessarily possess the characteristics of the claimed steel alloy.” According to the Action, at page 7, the Examiner’s *prima facie* case is rebutted. The claimed steel alloy is not rendered obvious by the teachings of the Yoshie patent. Withdrawal of the rejection of claims 1, 2, 23-24 and 28-38 under 35 U.S.C. §103(a) as being unpatentable over Yoshie et al. is requested.


Lyon U.S. Patent No. 2,942,339

The Examiner rejected claims 21-22 and 25-26 under 35 U.S.C. §103(a) as being unpatentable over Gondo or Yoshie in view of Lyon, U.S. Patent No. 2,942,339. Based on the differences between the claimed alloys and the teachings of the Gondo and Yoshie patents discussed above, applicants submit that claims 21, 22, 25 and 26 are not obvious in view of the combination of either of those patents and Lyon. Withdrawal of the rejection of claims 21, 22, 25 and 26 under 35 U.S.C. §103(a) as being unpatentable over any one of Yoshie or Gondo in view of Lyon is respectfully requested.

Conclusion

Applicants have made every effort to advance prosecution of the Subject Application. The claims are believed to be in condition for allowance. Reconsideration and allowance of claims 1, 2, 21-26, and 28-38 and consideration and allowance of new claim 39 are respectfully requested. If the undersigned can be of any assistance to the Examiner in advancing the application to allowance, the Examiner is urged to contact the undersigned attorney at the number set forth below.

Respectfully submitted,

  
Christine R. Ethridge  
Registration No. 30,557  
Attorney for Applicant

Kirkpatrick & Lockhart Preston Gates Ellis LLP  
Henry W. Oliver Building  
535 Smithfield Street  
Pittsburgh, Pennsylvania 15222-2312

(412) 355-8619 (Voice)  
(412) 355-6501 (FAX)